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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/606,482	06/26/2003	Pankai K. Mehrotra	K-1436PC1	5664
27877	7590	12/15/2006	EXAMINER	
KENNAMETAL INC. P.O. BOX 231 1600 TECHNOLOGY WAY LATROBE, PA 15650			SAVAGE, JASON L	
			ART UNIT	PAPER NUMBER
			1775	

DATE MAILED: 12/15/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/606,482	Applicant(s) MEHROTRA ET AL.	
	Examiner Jason L. Savage	Art Unit 1775	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 24 November 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-41,43 and 48-54 is/are pending in the application.
- 4a) Of the above claim(s) 1-24,35-41,43 and 48-54 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 25-28 and 30-34 is/are rejected.
- 7) ☒ Claim(s) 29 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

Claim Rejections - 35 USC § 102/103

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claims 25-26, 28 and 30 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Moriguchi et al (US 5,296,008).

Moriguchi teaches a ceramic cutting insert which is heat treated by sintering having excellent wear resistance and toughness (col. 1, ln. 10-14). Moriguchi further teaches that the heat treatment sintering step is performed at between 1700° to 1900°C under a pressure (col. 4, ln. 53-67). Moriguchi further teaches that while grinding the surface of a ceramic cutting insert is a conventional processing step, that other equivalent surface finishing steps may be employed such as blasting, barreling and ultrasonic vibration may be employed as alternatives to grinding (col. 5, ln. 31-46).

Regarding the use of the specific method steps set forth in the claims, the claims are drawn to the article, not the method of making. Absent a showing how the claimed cutting insert claimed by Applicant would have a material difference between the insert of Moriguchi and that claimed by Applicant it would not provide a patentable distinction over the prior art. The Patent and Trademark Office can require Applicant to prove that prior art products do not necessarily or inherently possess characteristics of claimed products where claimed and prior art products are identical or substantially identical, or are produced by identical or substantially identical processes; burden of proof is on Applicants where rejection based on inherency under 35 U.S.C. § 102 or on prima facie

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obviousness under 35 U.S.C. § 103, jointly or alternatively, and Patent and Trademark Office's inability to manufacture products or to obtain and compare prior art products evidences fairness of this rejection, *In re Best, Bolton, and Shaw*, 195 U.S.P.Q. 431 (CCPA 1977).

Regarding the limitation that the ceramic cutting insert is ground, Moriguchi's teaching that surface grinding causes flaws which forms cracks during heat treating is considered to be a teaching of a ground ceramic cutting insert which is heat treated.

Furthermore, Moriguchi teaches that the ceramic cutting insert is subjected to surface treatment processes which are equivalent to grinding (col. 3, ln. 59-65, col. 5, ln. 31-35). Absent a teaching or showing of how the product as claimed would materially differ from that of Moriguchi, it would not provide a patentable distinction over the prior art.

In the alternative, while Moriguchi teaches that grinding the cutting insert is not preferred, it clearly teaches that grinding of the surface is known and typically required to remove abnormal phases formed on the surface of the heat treated insert (col. 2, ln. 19-43). When considering a reference, all of the disclosures should be evaluated for what they fairly teach one of ordinary skill in the art even though the art teachings relied upon are phrased in terms of a non-preferred embodiment or even as being unsatisfactory for the intended purpose, *In re Boe*, 148 USPQ 507 (CCPA 1966); *In re Smith*, 65 USPQ 167 (CCPA 1945); *In re Nehrenberg*, 126 USPQ 383 (CCPA 1960); *In re Watanabe*, 137 USPQ 350 (CCPA 1963). As such, it would have been obvious to one of ordinary skill in the art to have subjected the cutting insert to a grinding step in

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order to insure that the strength and wear resistance is retained by the removal of any abnormal phases formed on the surface of the cutting tool provided one were willing accept that some cracks could form as a result.

Regarding claim 26, Moriguchi teaches that the cutting insert may be coated (col. 4, ln. 41-52).

Regarding claim 28, the cutting insert of Moriguchi would meet the claimed article limitations.

Regarding claim 30, Moriguchi teaches that the insert may be silicon nitride based and is preferably contained in an amount of at least 90% by weight (col. 4, ln. 53-68). Moriguchi further teaches that other elements may be contained in the insert such as aluminum nitride, alumina, magnesia and yttria in amounts that overlap the ranges claimed (col. 5, ln. 10-30).

Claims 28 and 31-34 are rejected under 35 U.S.C. 103(a) as obvious over Moriguchi et al (US 5,296,008) in view of either Jindal (US 5,858,181) or Beeghly (US 5,628,590).

Regarding claims 28 and 31, Moriguchi teaches what is set forth above however it is silent to the insert being hot isostatically pressed after sintering. Jindal teaches a ceramic cutting insert which may be heat treated by sintering or by hot pressing to form a densified insert (col. 3; ln. 32-47). Beeghly teaches ceramic cutting inserts have be sintered at high temperature or hot pressed in order to achieve full densification of the

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insert and thus insure that the desired fracture toughness and rupture strength is achieved (col. 1, ln. 35-57)

As such, it would have been obvious to one of ordinary skill in the art to have recognized that hot isostatic pressing could have been employed in forming the cutting insert of Moriguchi in order to insure the insert would be fully densified which would provide the insert with enhance fracture toughness and strength.

Regarding claim 32, Moriguchi is silent to the addition of silicon carbide whiskers. However, Beeghly teaches that it is known to add reinforcing materials such as silicon carbide whiskers to silicon nitride based ceramics (col. 2, ln. 62-67). As such, it would have been obvious to one of ordinary skill in the art at the time of the invention to have added known reinforcing materials such as silicon carbide whiskers to the cutting insert of Moriguchi.

Regarding claims 33, Moriguchi teaches that the insert may contain zirconia (col. 5, ln. 10-30).

Regarding claim 34, although Moriguchi is silent to the powder material containing titanium carbonitrides, it teaches that when a titanium carbonitrides coating is applied that is it to be expected that the TiCN will be found in the base material due to nitrogen diffusion (col. 4, ln. 41-52). As such, the cutting insert of Moriguchi would meet the claim limitation wherein TiCN is contained within the cutting insert body. In the alternative, it would have been obvious to have included compounds such as TiCN since it is recognized that the diffusion of this compound can assist in forming a coating which exhibits excellent adhesion strength to the base material.

Claims 25-28 and 31-34 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jindal et al. (US 5,858,181).

Regarding claims 25 and 28, Jindal teaches a ceramic cutting insert which may be heat treated by sintering or by hot pressing to form a densified insert (col. 3, ln. 32-47). Jindal further teaches that the cutting insert may be subjected to a grinding process to provide a fine surface finish (col. 8, ln. 46-67). Regarding the limitation that the heat treatment is performed at the claimed temperature, it would have been within the purview of one ordinary skill in the art to have determined what temperatures would be necessary in order to sinter and/or hot isostatically press the cutting insert of Jindal to provide the insert with suitable strength and toughness properties.

Regarding claim 26, Jindal teaches that the insert is coated (col. 8, ln. 46-67).

Regarding claims 27 and 31, although Jindal does not recite that the insert is formed by sintering and hot isostatically pressing, it teaches that conventional ceramic powder processing techniques and densification may be employed such as hot pressing or sintering (col. 3, ln. 31-47). It would have been obvious to one of ordinary skill in the art at the time of the invention to have employed both sintering and hot isostatic pressing when forming the ceramic cutting insert of Jindal in order to insure the insert was sufficiently densified and exhibited suitable strength and toughness properties.

Regarding claims 32-34, Jindal teaches that the insert may be alumina based and may contain materials such as silicon carbide whiskers, zirconia, as well as carbonitrides of material such as Ti (col. 4, ln. 1-32). Although Jindal does not

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exemplify an embodiment wherein titanium carbonitrides are contained in the cutting insert, it would have been obvious to have added then since it teaches carbide and carbonitrides of titanium may be included.

Response to Arguments

Applicant's arguments filed 11-24-06 have been fully considered but they are not persuasive.

Rejection of Claims 25-26, 28 and 30 under 35 USC §102/(b)/35 USC §103(a)

Applicant states that out that while alternative surface treatments to grinding are taught by Moriguchi, there is no teaching of heat treating the insert after these surface treatments, such as is recited in the claims. As was set forth in the rejections above, the claims are drawn to an article, not the method of making. Absent a showing how the claimed cutting insert claimed by Applicant would have a material difference between the insert of Moriguchi and that claimed by Applicant it would not provide a patentable distinction over the prior art.

Applicant argues that Moriguchi teaches away from grinding and thus cannot be applied against the claims. However, as was set forth in the rejection above, despite Moriguchi's teaching that the heat-treated ground cutting insert is a non-preferred embodiment since such an insert exhibits cracking, it would still meet the claim limitations.

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Furthermore, the claims are drawn to an article, not the method of making.

Although Moriguchi teaches the preferred method of forming the heat treated ceramic cutting insert does not involve grinding; Applicant has provided no proof or reasoning as to how the claimed product would be patentably distinct from that of the prior art of Moriguchi which has been subjected to the alternative surface treatment processes.

As was also set forth in the rejections above, while Moriguchi teaches that grinding should be avoided, it would still have been obvious to one of ordinary skill in the art to have subjected the cutting insert to a grinding step in order to insure that the strength and wear resistance is retained by the removal of any abnormal phases formed on the surface of the cutting tool provided one were willing accept that some cracks could form as a result.

Rejection of Claims 28 and 30-34 under 35 USC §103(a)

Applicant reiterates the same reasoning against the rejections as was set forth in response to the rejections under Moriguchi alone above.

Applicant further argues that the assertion by the Examiner that it would have been obvious to included titanium carbonitrides in the powder mixture due to the teaching in Moriguchi that titanium carbonitrides inherently diffuse into the cutting insert is an improper leap and does not render claim 34 as being obvious. However, Moriguchi clearly teaches the that titanium carbonitrides may be formed in the cutting ceramic insert and that their inclusion provides beneficial properties such as increasing the adhesion of titanium carbonitrides coatings (col. 4, ln. 41-52).

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Applicant has not shown how the article as claimed would be patentably distinct over the prior art containing titanium carbonitrides which are formed by diffusion. Furthermore, it would have been obvious to one of ordinary skill to have recognized that the addition of titanium carbonitrides to the cutting insert could provide enhanced adhesion of a titanium carbonitrides coating subsequently applied.

Rejection of Claims 25-29 and 31-34 under 35 USC §103(a)

Applicant argues that claim 25 requires a heat treatment after grinding and that Jindal's 400°C heating step does not equate to the heat treatment of the present invention.

While Jindal teaches the low temperature heating to clean the substrate surface, it also teaches that the formed cutting tool insert of Jindal's invention may be subjected to conventional processing techniques such as hot pressing or pressure less sintering (col. 3, ln. 32-47). Sintering and hot pressing would meet the limitation of being heat treatment processes such as is claimed.

Regarding claim 34, Applicant argues that Jindal merely provides a shopping list of refractory metal compounds, and hence, does not provide sufficient teaching to use titanium carbonitrides in the composition. To the contrary, Jindal teaches the claimed embodiment with sufficient specificity to render the claim as being obvious given that Jindal expressly recites that compounds titanium and carbonitrides may be added.

Allowable Subject Matter

Claim 29 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jason L. Savage whose telephone number is 571-272-1542. The examiner can normally be reached on M-F 6:30-4:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jennifer McNeil can be reached on 571-272-1540. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



Jason Savage
12-13-06



JENNIFER MCNEIL
SUPERVISORY PATENT EXAMINER

12/13/06